

What is claimed is:

1. A DNA molecule comprising the following elements in a 5' to 3' direction:

a first restriction endonuclease site,

5 a T3 promoter site;

at least one Tag gene, said Tag gene comprising at least 5 20 mer Tag sequences;

a Poly A site having at least 21 consecutive A residues, wherein said A residues are on the same strand as said T3 promoter such that when transcription is initiated at the T3 promoter, a Tag RNA transcript is produced having a poly A tail.

10 a second restriction endonuclease site which may be the same or different than said first restriction endonuclease site;

a T7 Promoter on the opposite strand as said T3 promoter.

2. A DNA molecule according to claim 1 wherein said Tag sequences are

15 selected from Seq. Id. Nos. 1-2050 or their complement.

3. A DNA molecule according to claim 1 wherein said Tag gene is selected from the group consisting of Tags A, B, C, D, E, F, G, H, I, J, N, O, Q, Tag IN, Tag IQ and Tag IQ.EX.

4. A DNA molecule according to claim 1 wherein, said first restriction 20 endonuclease site is SphI (gcatgc), said T3 promoter comprises the following sequence aattaaccctactaaagg; said Tag gene is selected from the group consisting of Tags A, B, C, D, E, F, G, H, I, J, N, O, Q, Tag IN, Tag IQ and Tag IQ.EX; said second endonuclease site comprises a PstI site (ctgcag); and said T7 promoter comprises tatagtgagtcgtatta.

5. A DNA molecule according to claim 1 comprising the sequence, wherein 25 capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaaggacgcgtacgtaaaggcttggatcctctagaATTTGATCGTAACTCGGGT
GACCAATGACCATATACGGCGTATTAAGGTTGTACCCCTCGGTCTCAACTTGTC
GTATGGGACTTCAAGTACCTTAGCTCGTCGGACGCTTAGATGACTTATCCA

TAGTCCTAAGTCCGGCGCCGGTTAAGCCGCTATTAGCGTGTGGACTCTCTC
TAGGAGCGGCTTCGCACAAATTACTGCTCAATCCTAGATACGTTGCGCTCTT
GGTAAACGGCTCAGATCTTAGCACTCGTGCAGTTCTACGATGGCAAGTCGTG
CCTCGTTCTCGTGTAGAATATCAGCTAATAGGGTCGGCTAACAGTGTATCCG
GTGGACAAGCACTGACACGCGATGACGTTCGTCAAGAGTCGCATAATCTCAG
AATCCGTACAGCCGCATCGGGTTCACGGCTATAAACAGCGTCATCAGCGTA
GGGTATCGCTTCGCGTGTCACTGACTTGGGCCACGTCTCTCTCGCACATTAG
GCTAGATTgtcgacccggaaattccggaaaaaaaaaaaaaaaaaaaaactgcagcgta
cgtatta.

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6. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaagggacgcgtacgtaagctggatccctagaTTTAGTCGTAGCCCCGAGC
TTAACTATTAGCGTCGGTGCTATATCCTTACCGCGTATGGAGTAGCCTTCCCG
AGCATTGTCTACCTTACCGTCAAGAAAACCATCGACTCACGGATATTGACC
AAACTGCGGTGCGATTAACTCGACTGCCCGTGAACAAACGATGAGACCGGGC
TAAGGCACGTATCATATCCCTAATTGCGCTGAATAGTGCCTACATATCCTAAT
ACAGGCGCGACGAACCTTATACTCGATGGAAGACAGTTACCCATGCATAA
AGCTCTATACTCCGAGAACTAGCATCTAACGCACTCGGCTCTAATGTTAAGTGC
TCGACCACAGATCGAAGGTCGGAACCTCCAGTGCCAAAGTACGATGGCTCACGT
CTTATTGGGCCGCCAGAGTTATGTTGAGTCTCGATGTATGCCGCTCGTTGC
CCTATTGTTGTGTCGGATCTCTAGTTgtcgaccggaaattccggaaaaaaaaaaaaaaaac
tgcaggcgtaccagcttcctatagtgagtcgtatta.

25 7. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaagggacgcgtacgtaagcttggatccctagaTGTGATAATTCGACGAGG
CGTTACATATTCTGAGAGGGGTGATTAAGTCTGCTCGGCCTGGGATGGTCTG
TCTACGTGTGCGTAGTCTGTCAAGCGTCGAGGATTCTGAACCTGTCCATAG
TATCCTGTAAGCGTCCAATGTACCTATATCGTGGACCCAAAGTCGATACGTCC
GATTAAGCGACGCTTGGCTAGGTAACGAATTATACCCCTCGGGTTACGAATTAT

GGCTGTGCCTAACGAATCTGGGACGTGCCTAACGTAATCTGGTCCGCGACTAA
GATGTACGGTGATCGTGGACGCTTGACCGGACTTATCGCTCGCCTCCGAGTT
ATTGGATGGCGTCCGTCCTATTGGATACTATTCCGTGCGTAGACGTT
CCGAGCATATGCTAACAGTCCGTCACTATGTAACGCTTGACGTAGATTGCTA
5 TCAGGTTACGATGACTGCTAACGCCATTACGCGACATTCTGCAAAGTTACGTCG
CATTCTCTCACGTTACGGCTGATTCTCTAGGCTTACGCGCATGAGCTCTAGGT
TCCGGGTACTATCGAACGTGTCATTGGTACTgtcgacccggaaattccggaaaaaaaaaaaa
aaaaaaactgcaggcgtaccagcttccctatagtgagtctgtattta.

10 8. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaaggacgcgtacgtaaagctggatccctagaATAGACTAGCCTGCCGGTC
AATAACTGATGACGCCGGAGTCAACCTGATAACCCATAGCGAACAGTCTAAC
CTACGCGAGATACTGCTTACCGCACATAGGTAAACCTATTGACTAGCAGG
15 CCTTATTCCGGTGCTATGAGTATCTTACCTGGCTAGGTATCTAATTGAG
TCGGGTACTACATTGCGATGGGCCTCGCTCGTCTATGAGGTCTCGTCT
TCGTGAGTGCAATGTATCCGAAGTCGTAGTGATAATATGAACTAGGCCGA
TTTGACGAACGTATGCCCATATTGAAACGTCGCCTGGAAATTGCCACCTA
GATCGAAATTATCGGAACTCGTCGTTATTTACGAAACCTTGGGAGCCGTT
20 AAAGCTGAGTCTGGTTCTTATTAGCGAGGAGCATTGTAATACTGAGCCG
AATATCGTAAGACATCCGCGAGCGACTGTAACACTAACGGGAACTTATTAT
AGAGCCGGTCCAGGTCTTGAACGACGTgtcgacccggaaattccggaaaaaaaaaaaa
actgcaggcgtaccagcttccctatagtgagtctgtattta.

25 9. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaaggacgcgtacgtaaagctggatccctagaCCATCCGATTAAATACCGT
GGATTACGTTAACGTTACGGCGGTGACTTAGTTATGCGAGGTTCGCTACGTT
GCATAGCGGATCGCTAACCTCTATGCGTACAGCTTACCTACTATGCGTCAA
30 GTTACCGAGCTGACGTCGCGTTAGACAGCTCATTGTCACGTTAGGACTATG
TCGAAGCGTTCGACCATGTCGTCTAGCTTAATACCTCTGCGTCTCAGTTAAT

AGTACGGGCAATCCGTATGTAAAGGGTGACCACGTTCAGAAGCTGCCATA
TACTTACACAGCAGGCGATCACGTTAGATCCACTGCGTCACGTTACCTACATG
ATCGATCCGATTACAGGCCGATCCATCGGATTACACACGAGTCCTGCACGTT
AGAACACTGGCTCGCGGCTTAGATCAGCTCCCTCGCTGGAGATCGAATACG
5 CCCAGCTWAGAGCGAATTGCGGCGCGTCGACATAATTGCCGACGCTTCGAC
AGAATTGTAGGCGATTCTAGCCAATTGCACGTCGTATTAGGTAGTCACTCTCG
ACCTAGCGTAAGGATCCACGATCCTAGAGTCGGtgcacccggaaattccggaaaaaaaaaaaa
aaaaaaaaactgcaggcgtaccagcttccctatagtgagtgcgttata.

10 10. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctcaactaaaggacgcgtacgtaaagctggatccatgtacAGCGGGTCACTCAGCATAT
AGTCGTTGCACCTAGTTGATAGTCGCCGATTCTAGTTATGGCGTCGGATTAGA
CCGGATCACCCGGACATGGACGTTAAGTATCCGGCTGGACGACAATAATT
15 GGCGGTGCCTCACAATATTCCGAGAACTCTGCATCAATTGGGCTAGTCGTAC
CTGAACGGGCATCAGTCGAATCTCTCGTGGCTAGTCTGTGACGTCCGTGGTT
CATCGTGTACCCACCGCGGTACATGAGTCAAAGTCCGAATAGCTCGCGAACG
TCCGTCTAGCTGGATCAACCTATCCCTGAGTCTATATGCGTACCAATGGATGC
GGTCTCCTCCGACTGAGTATGCGTCTCGGACTGGATCAGCTATCCACGAGC
20 TGTAATCCGGTACTAGGGTGTATGCCCTGTTACTAGGTTAGACAGTCGTGTAC
TCGGTTAGACTGATGGTCAACGACCTATACTGACAGCATACTGAGACGTGACG
ACTGCATAGTGGTCGGTCTGACACATCTCCTCGTGGTAGTACGTGCCCGTA
TGGATAGGGCTTAGCCCGCTATGGTAGTCTAATGCCGTTGGTCTGTATGC
AGTGCGGTATGGTCTCTCAGTCACGTATGGTCGCTGCTGTCCGTATGTG
25 TTAGATGCgtcgacccggaaattccggaaaaaaaaaaaaaaaactgcaggcgtaccagcttccctatagtgag
tcgttata.

11. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

30 gcatgcaattaaccctcaactaaaggacgcgtacgtaaagctggatccatgtacATGCAGCGTAGGTATCGAC
TCTCACTGTGGAGTCGTCTATGATGTCGTGGAGTCCTCTCAGAGTGCTGTAGG

TCCTCATAGGTCGTGCTGTCTCTACACGCGTGCAGTGAGTCTACATTCTGC
GAGTTGGTGCCTCACTGCGGTGTCACTGATCTCTCCCGGTGTGACATGAGTC
TAGCTTCGCGGTATGGTCTATCCCAGCGATGGATGAGACTACTCTGTACTAG
ATGGTCATGCCCTGCGAATGAGTCGTCACTGCCACAAATGTCTCGATAGTGC
5 CCGAATGTGTCTGTAATGCCTCGAATGTGTAATCGTCAACTCGTATGTGAAGT
GCTAGGCTAGTATTGACATCTACGGGCGGCTATTGACGAACCTCCGGTATAT
GCTCTACATCTGCAGGGATTGCCGACCATATATGGGTCTTGCTGATACGCTA
GGGTGCTTGCTACTTAGATAGGCGTCTGGCCGCTATTGCGCGTGTCTCAG
AATATGCGCGACGTGTCTGGTATATGGCGACTGTGTCCGTCTACGCATACT
10 GGTCCACATATAGACATACTCCACGACATGACAAAGCGTGCTCCTACATAG
CACGAGCGTCTCCTAAATAGATCCGGTCTATCGCTGAATGTCTAGGATTCTC
GTCAATGATCTACGATCCTCGCTAAGTATTGCCACCTCGTATAGTATTGCG
GCACCTGAGGATTTCACCTGACTCGCGTATAATATGCCGTACCTAGTCT
Agtcgacccggaaattccggaaaaaaaaaaaaactgcaggcgtaccagcttccctatagtgagtgcgtatta.

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12. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaaggacgcgtacgtaaagctggatcccttagaGATATGCGTTACGTGAGTC
TGATAGCAGTTCACTACCTGGATATCTGATCCACTAGCTCGATCATGCTCACC
20 CATAGTTATCTGCATCACTCGTACTGAAATGCTCACATCGCAGGTAGAGCAG
CATCGTAGAGCGTCAAGCTGCATCCTAGCGTCATGAGTCATACTACCTCATGC
TCACGTGATCTACCCCTAGCTGACCGCTAATGACGGCAGTGCAACCTGAGATA
CCGACGGCATACTGCGTCAACGTCAGGCAATGTGTCCGAACGGCGAGCTAC
GTCGCCTACGGAGTAATCGCGTCCCTCTAGGTATACTGCCGTGGTTAGGT
25 CATATGTCGGGTTCTGCACATATCACGGACGTATCGCTATCAGACGGACG
CTCTCGGACCTAAACCGTAGCTCTCGGCAAGATCGTCCTCGTCTCGAATATAG
CGCCCTAGTGCTGCAAATGTCACCGCTATCTCGTAAGGGGTCCGTCTGTTGAG
TTAGGCCTCCTCTCGTGGATGTGAGCTCGGTGCTGGATGGTGCAGCTTAC
TTCGCGTACCTGCTGTTGCATCAGTCCTCTGCATCTATAATCGCGTATCTCTC
30 TCTAGTAGACCATATAGCCATCTAACGCGCTCGATATTCCACCTAAGTGGCGCC
TATTGAACTAAGTGGCAGCCGAATGGACTATCGCTCCTCGATATGTACGGAT

AGGCCACGGCATGTACGAGCATAAGCCGAAC TG CAC GAG CATA CCC GAC ACT
GATCTGAGAGTCGCTTAAATCATCTCGTGTCTAGAGCTTATGCCATGTCT
GTCAACTGTACTGTACCTGTAACTGTAGCGTATGTGgtcgacccggaaattccggaaaa
aaaaaaaaaaaaaaaactgcaggcgtaaccagcttccctatagtgagtcgtatta.

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13. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctactaaaggacgcgtacgtaagctggatccttagaGATAAGCGTTCACAGCTCG
GCAATACCTGTGACGAGCTGCTCGCAAGATTACGCAGTGTGGCTATACTTG

10 ACAGTGATGGCGCTTACTTCAGATGTATGGGTGATACTTCGCTATATGGGTGG
TCACTTCTCTATGGCGCGTACAATGTACTATGGAGCGGTCAATGTCAGTACG
GATCGCGTCGATCTAGGTGACTACGCACGCCTCTGGAGTAAATCGARWGCTC
CGTGCAGAAATACGCGGTATCGTGCATAACCGAGTCATCGTGAGTAGTAT
GAACGTGTCGTGTTATGCAGCGGTATGTCGTGCTATAATGGCGTCTGCGTGC
15 TCATAAAGGTCCCTGTAGTGCTAGACGTGTCATCGAGCTGCATAGCTATACT
TTCGAGTCACTGGGATACTTCGATAGCGTTGAAATAGTGTGCTAGGCTCTC
GGGCACGTTGYAAACTGTTGCCGCCATTCAAGATTAGTCCAGCTCGTACTA
TCGAATAACACCATCGTCGTATCGAATAATCGCACCTCGTAGGAGTCAGTTGCC
ACTCGTTGATAGTCAACCAAGCTCGTTAGATAGTAGGCCAGATCCTACGAGA
20 TGAGCTACGTAACTACAGTGATAGCATATAGGGTACGCTAGAATGCCAGGTC
GTAGTCGAATTAGTCAGGTTGGATGTCTACTAGTTGACTTGGAGTATGCCATG
AAGACTCGTCCCTCGATATCAATACTCGTCCGCAGGTGAACACTGTAGTCGGT
GCTAGTGCCCACCTCTCGGTATGTGTCCTCAATTATCGAGTAGGATTCTAATC
AATCGTCGCGGCTCACTAATYGTCTCGGTGGCTACTAATGGTTACGGTGCCT
25 GACTAATCGTGTAGGTGCTAATACATCGTACGGCGATATAATGCTCG
ATACGGCAAATATAGCTCCGTCCGGTgtcgacccggaaattccggaaaaaaaaaaaaac
tgcaggcgtaaccagcttccctatagtgagtcgtatta.

14. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene
sequence:gcatgcaattaaccctactaaaggacgcgtacgtaagctggatccttagaCAATGATAGGCTA

20 15. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene

sequence:gcatgcaattaaccctactaaaggacgcgtacgtaagcttggatccctagaAGATCGCAGGGTA
TCGCATCGACAGACCTGGTATCGTCGTACGAACGTGCTACTCGCTTATCGGG
25 CCTGCTACATCAGTGGCGATGTTCGTAACCCTAGCCGATCTTCTTACTTACG
AGGCTACTATTGATCAAACCTCGCCTATCTGGTAATAACTGCGGTGATCTGGT
AGCCACTACGTGCGCCTGGTAGCAAATACGGCGAGCTGGTATCACTATCGGC
TCAGTGGTCCGACATAGTGCCAGTGGTTCGCATAACTGCCGCTGGTCCAAT
ATAACACCGCAGTCGTCAATCATACGAGCCGATGGTCAGCAATAGCGCCTGTG
30 GTGACACTATGCCACCTCTGGTCTAATATAGCGCCCTGTGGTTCGTATAATCGA
GCGCGTAATCGTATATYCGACTGTAGGTGCGTAACTCGCGACTAGGTGGCTC

TAATCTCGTTGGTTGTCGCTCACAGTGTCTGGTGGATACCCGGATCGGG
TTCCGTAATCTTGGCATCGAGGTTTCGTACATGTCACGCCGTCTCGTTATTCT
CGGTGGTGCTCAGTACATCCAGTGGTGAGTCGCTACATCACACGGTATCCG
GCTAAACCTCTGGGCATCCGTATTAAGCGACATTCTACGACTTATCAGCACG
5 TCCTACGGTATAACAAGGCGTGCTACGGTCTAACGACGCTGGTAGCAGTCTA
TCAGATCGCTAGTACGAGTTAGAGATGCTTAGTACGCCTCGAATCTATGATG
CTCGTGCACCGCGATGCACTCGGATTATGGCACATGCACTCGCGTAATGAC
GCTGCATCGCTCAGTATGATCCATGAGCGCCGTGAATGACGCATGAGCCTCG
TATCGAGTGCATGAGCTGTCTTCACATGATACTCGCTCTAAATCATCATGC
10 GACAGTCTCGACAGCAGCTCAGCATCTATGCATCATGTGCCTCACTAGGACA
TCATGCTCGACTCTGAGACACTGATCGAGCATTAAAGACgtcgaccggaaattccggaaaa
aaaaaaaaaaaaaaaaactgcaggcgtaccagcttccctatagtgagtcgtattta.

16. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized
15 bases refer to Tag gene

sequence: gcatgcaattaaccctcaactaaagagagacgcgtacgtaagctggatcctctagaCTCTGTGTATGAT
CGTAGTTGTCGAGTGTCTGTACCAATACTCTGGTGGAGCTATATAAGCCGC
TGTTGCGTAAATCAACGGCATGATCCCTATGACCGCGTCATGCTAACTGATAC
ACGCTGCTCGAACACTGATACGCACACTGATAACTATGCGCAGACGCTTGAA
20 ACGATGTGACATCGCTCTAGAGTATGAGCCGAATGCACGACTGATACTCG
ATATGAGCAGCAGTCGGCTATGATTGCAATGCTGCAGTATGTATCCTGATC
GTGCGTGCATGTCTGATAATACGCTCGATGATATGTATTGCGCTCAGATGC
TGGAGATATGCCATGCGTGTCACTGATGCCATGTATGCTGATATGTCGCGA
TCTATGTGGTACTATGAGATCCATGTGATGACGTTGCAGTCTCTGTGACCTT
25 ATCGACGCGCATGTGAGCCTATAGACAGCGATGTGAGCACTCTCATCTCGG
ATCAGTCTATCCTCGCTGATGCTCAGTGATACACGCTGATGCACGTAGTGAGC
ATCCTGTGCTCGCATACCGCTGCTGCACTGATATGAGCCAGTGCTGCTGCT
CTCTACGGAGTGTGCTGGCTATAACAGCGAGTGCTACGCCTAAACTGGCTG
TCTAGCACTGTAGCTGGTGCATGTACTCGACTGCCGCTGCATCTACTATAAGA
30 CTCTGACATTAGCGTATAGGCTGATACATTAGCTCGGATGCTATCAGCTTGCG
CCTATTATATGCCTGACGCCGGATCTATCAGAACGACTCGGTAGCTCATATAC

TGGATCACGGTGCACAAACATGCTACACGAGGTCTCAGACTCTATCCCGTGG
ACTCAACGTGCATCTGCTATGCTGAGCGCGTATCTGTGTACCTGTCCGATGCT
CTGATCTACACTGCCGTATCGTTATATGACGAGACTGTGCGCTCATAGCCGA
CACTGTGCTCGATAAGACCACGCTGTGCGGATATAgtcgacccggaaattccggaaaaaaa
5 aaaaaaaaaaaaaactgcaggcgtaccagcttccctatagtgagtcgtattta.

17. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene
sequence:gcatgcaattaaccctcaactaaaggacgcgtacgtaaagcttggatcctctagaCTAGTGCATCCTCG
10 TGGCATCATGCGTCTCCTCAGTAGGTCTGCGACTGATCCTAGTGCAATGCGTC
TGAGCCTGAGCTACAGCGATATAGCCTGGATTGTGAGCGTATTGCTGTCAG
AACCTCAGCTCATCATGTATGATGCTGTACCATCCTGCGATACTGAAGATGCA
CCGCTATAATGCGAGGCTCTCCGCTAAAGTGGAAGCTGCTCGTTCTCAATGCG
AGCGAGTCGAATCCAATGCCGTAGCTGCGATAACGATGCCGCTGACTCTACG
15 GTAATGCACGATCCTCTACATTGATAGCAGATAGTCTAACGGGATAGCATAG
GTGCAAGGCTCCTAGCATGTAGTCACAGGTGCTCAGATATAGTCATCGCTGC
AATCAGCTAGTCATCTTGTCAAGGATGCTACTCACTGCGTGCAGAAGATTGCA
CGACTTCAGAGGATGGCACTCGTCATTAGAGTGATGTTCTCGGATCGACACT
GCTGGTCTGCGAATGACTCGCATTCAACTAACATGGAGCATTGTTCTAAAG
20 GGGATGCACGTTATCGTCGAGTGGCCGTATGTCTATGCAGTGCGGCCTATGT
CTCATTAGCGAGTCGTATGTATCATGTCGGGCTCGAATGTTGCACACGTCTGC
GTAATGGTGACCGCTAGTCCASATGGTGCTCGTAGGCCACAAATGTCGTTAG
GTAGACCGACGTTATCGCGCTAACCGATGTCAACCGAGTTAGACCGTAT
CGTCCCCAGTGCCCTAACGATGGTCAAGCGTGCCTACGTTAGTATCAGTTTC
25 CCTATTGGTACGTCTGGCGTACTTCTGAAACGTGATGGCGGCTGGTTACCCG
TATATGGGCTCGGTTGACCTCTATTGGGCGTTGTTGACCCGAATTGGTATCC
TCGTCGTTAAATGGCGAACGTCGTCTGCTATAGGCAAACGTCTGTCGGTCATG
GCAAATGTTACTCGTGTGCAAGAAATTACTCGCTGTCgtcgacccggaaattccggaa
aaaaaaaaaaaaaaaaaaaaactgcaggcgtaccagcttccctatagtgagtcgtattta.

18. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene sequence:

gcatgcaattaaccctcaactaaagggacgcgtacgtaagcttGATAAGCGTTACAGCTCGGCAATAC
CTGTGACGAGCTGCTCGCAAGATTACGCAGTGTGGCTATACTTGACAGTGAT
5 GGCGCTTACTTCAGATGTATGGGTGATACTTCGCTATATGGGTGGTCACTTCT
CTATGGCGCGTGACAATGTACTATGGAGCGGTCAATGTCAGTACGGATCGCG
TCGATCTAGGTGACTACGCACGCCTCTGGAGTAAATCGAGTGCTCCGTGCGA
AATAACGCGGTACATCGTGCATAACCGAGTCATCGTGAGTAGTATGAACGTG
TCGTGTTATGCAGCGGTATGTCGTGCTATAATGGCGTCTGTCGTGCTCATAAG
10 GTTCCCTCTGATGTGCTAGACGTGTCCATCGAGCTGCATAGCTATACTCGAGT
CACTTGGGATACTTCGATAGCGTTGTGAATAGTGTGCTAGGCTCTCGGGCACG
TTGTTAAACTGTTGCCGCCAATTCAAGATTAGTCCAGCTCGTACTATCGAATA
CACCATCGTCGTATCGAATAATCGCACCTCGTAGGAGTCAGTGCCACTCGTT
GATAGTCAACCAAGCTCGTTAGATAGTAGCCCAGATCCTACGAGATGAGCTA
15 CGTAACTACAGTGATAGCATATAGGGTACGCTAGAATGCCAGGTCGTAGTCG
AATTAGTCAGGTTGGATGTCTACTAGTTGACTTGGAGTATGCCATGAAGACTC
GTCCCTCGATATCAATACTCGTCCGCAGGTGAACACTGTAGTCGGTGCTAGTG
CCCACCTCTCGGTATGTGTCCTCAATTATCGAGTAGGATTCTAATCAATCGTC
GCGGCTCACTAATTGTCTGCCGTGGCTACTAATGGTTACGGTGCCTGACTAAT
20 CGTGTAGGTGTCTAATACATCGTGATACGGCGATATAATGCTCGATACGGC
AAATATAGCTCCGTCCGGTGGATCCAGATCGCAGGGTATCGCATCGACAGAC
CTGGTATCGTCGTGACGAACGTGCTACTCGCTTATCGGGCCTGCTACATCAGT
GGCGATGTTCGTAACCCCTAGCCGATCTTCTACTTACGAGGCTACTATTGCA
TCAAACTCGCCTATCTGGTAATAACTCGGGTATCTGGTAGCCACTACGTGCG
25 CCTGGTAGCAAATACGGCGAGCTGGTATCACTATCGGCTCAGTGGTCCGACA
TAGTGCCAGTGGTCGCATAACTGCCGCTGGTCCAATATAACACCGCAGTC
GTCAATCATCGAGCCGATGGTCAGCAATAGCGCCTGTGGTACACTATGCC
ACCTCTGGTCTAATATAGGCCCTGTGGTCGTATAATCGAGCGCGTAATCGTA
TATCCGACTGTAGGTGCGTAACTCGCGACTAGGTGGCTCTAATCTCGGTGGT
30 TGTGCGCTCACAGTGTCTGGTGGTCGATACCCGGATCGGGTCCGTAATCTTGG
CATCGAGGTTTCGTACATGTCACGCAGCTCGTTATTCTCGGTGGTGCAG

TACATCCAGTGGTGAGTCGCTACATCACACCGTGATCCGGCTAACACCTCTGG
GCATCCGTATTAAGCGACATTCTACGACTTATCAGCACGTCTACGGTATAA
CAAGGCGTGCTACGGCTAACGACGCTGGTAGCAGTCTATCAGATCGCTAGT
ACGAGTTAGAGATGCTTAGTACGCCTCGAACATCTATGATGCTCGCTACGC
5 GATGCACTCGGATTATGGCACATGCACACTCGCGTAATGACGCTGCATCGCTCA
GTATGATCCATGAGCGCCGTGAATGACGCATGAGCCTCGTATCGAGTGCATG
AGCTGTCTTCACATGATAACATCGCTCTAAATCATCATGCGACAGTCTCGACA
GCAGCTCAGCATCTATGCATCATGTGCCTCACTAGGACATCATGCTCGACTCT
GAGACACTGATCGAGCATTAAAGACtctagagcggccggactagttagctcgacccggaaatt
10 ccggaaaaaaaaaaaaaaaaactgcaggcgtaccagcttccctatagttagtcgtattta.

19. A DNA molecule according to claim 1 comprising the sequence, wherein capitalized bases refer to Tag gene
sequence:gcatgcaattaaccctactaaagggacgcgtacgtaagcttGATAAGCGTTCACAGCTCGGC
15 AATACCTGTGACGAGCTGCTCGCAAGATTACGCAGTGTGGCTATACTTGAC
AGTGTGGCGCTTACTTCAGATGTATGGGTGATACTTCGCTATATGGGTGGTC
ACTTCTCTATGGCGCGTGACAATGTACTATGGAGCGGTCAATGTCAGTACGG
ATCGCGTCGATCTAGGTGACTACGCACGCCCTGGAGTAAATCGAGTGCCTCC
GTGCGAAATACGCGGTACCGTGCATAATAACCGAGTCATCGTGAGTAGTATG
20 AACGTGTCGTGTTATGCAGCGGTATGTCGTGCTATAATGGCGTCTGTCGTGCT
CATAAAGGTTCCCTCTGATGTGCTAGACGTGTGAATAGTGTGCTAGGCTCTCG
TCGAGTCACGGGATACTCGATAGCGTTGTGAATAGTGTGCTAGGCTCTCG
GGCACGTTAAACTGTTGCCGCCATTCAAGATTAGTCCAGCTCGTACTAT
CGAATACACCATCGTCGTATCGAATAATCGCACCTCGTAGGAGTCAGTTGCC
25 ACTCGTTGATAGTCAACCAAGCTCGTTAGATAGTAGGCCAGATCCTACGAGA
TGAGCTACGTAACTACAGTGTAGCATATAGGGTACGCTAGAATGCCAGGTC
GTAGTCGAATTAGTCAGGTTGGATGTCTACTAGTTGACTGGAGTATGCCATG
AAGACTCGTCCCTCGATATCAATACTCGTCCGCAGGTGAACACTGTAGTCGGT
GCTAGTGCCCACTTCTCGGTATGTGTCCCTCAATTATCGAGTAGGATTCTAATC
30 AATCGTCGCGGCTCACTAATTGTCTCGGTGGCTACTAATGGTTACGGTGCCT
GACTAATCGTGTAGGTGTCTAATACATCGTGTACGGCGATATAATGCTCG

PATENT
Attorney Docket No.:3502.1

ATACGGCAAATATAAGCTCCGTCCGGTGGATCCAGATCGCAGGGTATCGCATC
GACAGACCTGGTATCGTCGTGACGAACGTGCTACTCGCTTATCGGGCCTGCTA
CATCAGTGGCGATGTTCGTAACCCTAGCCGATCTTCTTACTTACGAGGCTAC
TATTCGATCAAACCTCGCCTATCTGGTAATAACTGCGGTGATCTGGTAGGCCACT
5 ACGTGCCTGGTAGCAAATACGGCGAGCTGGTATCACTATCGGCTCAGTGG
TCCGACATAGTGCCAGTGGTCGATAACTGCCGCTGGGTCCAATATAACA
CGCAGTCGTCAATCATACGAGCCGATGGTCAGCAATAGGCCGTGGTGACA
CTATGCCACCTCTGGCTAATATAAGGCCCTGTGGTCGTATAATCGAGCGCGT
AATCGTATATCCGACTGTAGGGCGTAACTCGCGACTAGGTGGCTCTAATCTG
10 CGTTGGTTGTCGCTCACAGTGTCTGGTGTTCGATACCGGATCGGGTCCGTA
ATCTTGGCATCGAGGTTTCGTACATGTCACGCCGCTCGTTATTCTCGGTGG
TGCTCAGTACATCCAGTGGTGAGTCGCTACATCACACGGTGATCCGGCTAAA
CCTCTGGGCATCCGTATTAAGCGACATTCTACGACTTATCAGCACGTCCTAC
GGTATAACAAGCGTGCTACGGCTAACGACGCTGGTAGCAGTCTATCAGAT
15 CGCTAGTACGAGTTAGAGATGCTTAGTACGCCCTCGAATCTATGATGCTCGT
CTCACCGCATGCACTCGGATTATGGCACATGCACTCGCGTAATGACGCTGCA
TCGCTCAGTATGATCCATGAGCGCCGTGAATGACGATGAGCCTCGTATCGA
GTGCATGAGCTGTCTTCACATGATAACATCGCTCTAAATCATCATGCGACAGT
CTCGACAGCAGCTCAGCATCTATGCATCATGCGCTCACTAGGACATCATGCT
20 CGACTCTGAGACACTGATCGAGCATTAAAGACTCTAGACTCTGTGCCATGATC
GTGAGTTGTCGCACTGTCTGTACCAAAACTCTGGTGGAGCTATATAAGCCGCT
GTTGCGTAAATCAACGGCATGATCCCTATGACCGCGTATGCTAACTGATAC
ACGCTGCTCGAACAGTGATACGCACACTGATAACTATGCGCAGACGCTTGAA
ACGATGTGACATCGCTCTAGAGTATGAGCCGAATGCACGACTGATACTCG
25 ATATGAGCAGCAGTCGGCTATGATTGCAATGCTTGCAGTATGTATCCTGATC
GTGCGTGCATGTCGATGATAATACGCTCGCATGATATGTATTGCGCTCAGATGC
TGGAGATATGCCATCGTGCTGTCAGTATGCCATGTATGCTGATATGCGCGA
TCTATGTGGTACTATGAGATCCATGTGATGACGTTGCAGTCTCTGTGACCTT
ATCGACGCGCATGTGAGCCTATAGACAGCGATGTGAGCACTCTCATCTGCGG
30 ATCAGTCTATCCTCGCTGATGCTCAGTGATACACGCTGATGCACGACTGAGC
ATCCTGTGCTCGCATACCGCTGCTGCACTGATATGAGCCAGTGCTGCTGCT

CTCTACGGAGTGTGCTCGGCTATAACAGCGAGTGCTACGCCTAAACTGGCTG
TCTAGCACTGTAGCTGGTGCATGTACTCGACTGCCGCTGCATCTACTATAAGA
CTCTGACATTAGCGTATAGGCTGATACATTAGCTCGGATGCTATCAGCTTGC
CCTATTATATGCCTGACGCCGGATCTATCAGAACGACTCGGTAGCTCATATAC
5 TGGATCACGGTGCACAAACATGCTACACGAGGTCTCAGACTCTATCCCGTGG
ACTCAACGTGCATCTGCTATGCTGAGCGCGTATCTGTGTACCTGTCCGATGCT
CTGATCTACACTGCCGTATCGTTATATGACGAGACTGTGCCTCATAGCCGA
CACTGTGCTCGATAAGACCACGCTGTGCGGATATAGTCGACCTAGTGCATCCT
CGTGGCATCATCGTCTCCTCAGTAGGTCTGCGACTGATCCTAGTGCAATGCG
10 TCTGAGCCTGAGCTACAGCGATATAGCCTGGATTGTGAGCGTATTGCTGTCA
GAACCTCAGCTCATCATGTATGATGCTGTACCATCCTGCGATACTGAAGATGC
ACCGCTATAATGCGAGGCTCTCGCTAAAGTGGAAAGCTGCTCGTTCTCAATGC
GAGCGAGTCGAATCCAATGCCGTAGCTGCGATAACGATGCCGACTCTAC
GGTAATGCACGATCCTCTACATTGATAGCAGATAGTCTAACGGGATAGCATA
15 GGTGCAAGGCTCCTAGCATGTAGTCACAGGTGCTCAGATATAGTCATCGCTG
CAATCAGCTAGTCATCTTGTCAAGGATGCTACTCACTGCGTGCAGAAGATTGCG
ACGACTTCAGAGGATGGCACTCGTCATTAGAGTGATGTTCTCGGATCGACAC
TGCTGGTCTGCGAATGACTCGCATTCACTAACATGGAGCATCGTTATCTAAAG
GGGATGCACGTTATCGTCGAGTGGCCGTATGTCTATGCAGTGCGGCTATGT
20 CTCATTAGCGAGTCGTATGTATCATGTCGGGCTCGAATGTTGCACACGTCTGC
GTAATGGTGACCGCTAGTCCCACATGGTGCCTCGTAGCCACAAATGTCGTTAG
GTAGACCGACGTTATCGCGCTATACCCGATGTCAACCGAGTTAGACCGTAT
CGTCCCCAGTGCCCTAACGATGGTCAAGCGTGCCTACGTTAGTATCAGTTTC
CCTATTGGTACGTCTGGCGTACTTCTGAAACGTGATGGCGGCTGGTTACCCG
25 TATATGGGCTCGGTTGACCTCTATTGGCGTTGTTGACCCgaattccggaaaaaaaaaaaaaa
aaaaaaaaactgcaggcgtaccagcttccctatagtgagtcgtatta.

20. A DNA molecule according to claim 1 further comprising at least two additional restriction sites.

21. A DNA molecule according to claim 20 comprising the sequence wherein capitalized bases refer to Tag gene sequence

gcatgcaattaaccctactaaagggacgcgtacgtaaacgtttGATAAGCGTTCACAGCTCGGCAATAC
CTGTGACGAGCTGCTCGCAAGATTACGCAGTGTGGCTATACTGACAGTGAT
5 GGCGCTTACTTCAGATGTATGGGTGATACTTCGCTATATGGGTGGTCACTTCT
CTATGGCGCGTGACAATGTACTATGGAGCGGTCAATGTCAGTACGGATCGCG
TCGATCTAGGTGACTACGCACGCCTCTGGAGTAAATCGAGTGCTCCGTGCGA
AATACGCGGTACCGTGCATAACCGAGTCATCGTGAGTAGTATGAACGTG
TCGTGTTATGCAGCGGTATGTCGTGCTATAATGGCGTCTGTCGTGCTCATAAG
10 GTTCCTCTGATGTGCTAGACGTGTCCATCGAGCTGCATAGCTATACTTCGAGT
CACTGGGATACTTCGATAGCGTTGTGAATAGTGTGCTAGGCTCTCGGCACG
TTGTTAAACTGTTGCCGCCAATTCAAGATTAGTCCAGCTCGTACTATCGAATA
CACCATCGTCGTATCGAATAATCGCACCTCGTAGGAGTCAGTGCCACTCGTT
GATAGTCAACCAAGCTCGTTAGATAGTAGCCCAGATCCTACGAGATGAGCTA
15 CGTAACTACAGTGATAGCATATAGGGTACGCTAGAATGCCAGGTCGTAGTCG
AATTAGTCAGGTTGGATGTCTACTAGTTGACTTGGAGTATGCCATGAAGACTC
GTCCCTCGATATCAATACTCGTCCGCAGGTGAACACTGTAGTCGGTGCTAGTG
CCCACCTCTCGGTATGTGTCCTCAATTATCGAGTAGGATTCTAATCAATCGTC
GCGGCTCACTAATTGTCTGCGGTGGCTACTAATGGTTACGGTGCCTGACTAAT
20 CGTGTAGGTGTCTAATACATCGTACGGGCATATAATGCTCGATACGGC
AAATATAGCTCCGTCCGGTGGATCCAGATCGCAGGGTATCGCATCGACAGAC
CTGGTATCGTCGTGACGAACGTGCTACTCGCTTATCGGCCTGCTACATCAGT
GGCGATGTTCGTAACCCCTAGCCGATCTTCTTACTTACGAGGGCTACTATTCGA
TCAAACTCGCCTATCTGGTAATAACTGCGGTGATCTGGTAGCCACTACGTGCG
25 CCTGGTAGCAAATACGGCGAGCTGGTATCACTATCGGCTCAGTGGTCCGACA
TAGTGCCCAGTGGTTCGCATAACTGCCGCTGGTCCAATATAACACCGCAGTC
GTCAATCATACGAGCCGATGGTCAGCAATAGCGCCTGTGGTACACTATGCC
ACCTCTGGTCTAATATAGGCCCTGTGGTCGTATAATCGAGCGCGTAATCGTA
TATCCGACTGTAGGTGCGTAACTCGCGACTAGGTGGCTCTAATCTCGGTTGGT
30 TGTGCGCTCACAGTGTCTGGTGGTACATACGCGGTCTCGTCATTCTCGGTGGTAC
CATCGAGGTTCGTACATGTCACGCGGTCTCGTCATTCTCGGTGGTAC

TACATCCAGTGGTGAGTCGCTACATCACACGGTGATCCGGCTAACACCTCTGG
GCATCCGTATTAAGCGACATTCTACGACTTATCAGCACGTCTACGGTATAA
CAAGGCGTGTACGGTCTAACGACGCTGGTAGCAGTCTATCAGATCGCTAGT
ACGAGTTAGAGATGCTTAGTACGCCTCGAATCTATGATGCTCGTGCTCACGC
5 GATGCACTCGGATTATGGCACATGCACTCGCGTAATGACGCTGCATCGCTCA
GTATGATCCATGAGCGCCGTGAATGACGCATGAGCCTCGTATCGAGTGCATG
AGCTGTCTTCACATGATAACATCGCTCTAAATCATCATGCGACAGTCTCGACA
GCAGCTCAGCATCTATGCATCATGTGCCTCACTAGGACATCATGCTCGACTCT
GAGACACTGATCGAGCATTAAAGACTCTAGACTCTGTGCCATGATCGTGAGTT
10 GTCGCAGTGTCTGTACCAAACTCTGGTGAGCTATATAAGCCGCTGTTGCGT
AAATCAACGGCATGATCCCTATGACCGCGTCATGCTAACTGATAACACGCTGC
TCGAACAGTGATACGCACACTGATAACTATGCGCAGACGCTTGAAACGATGT
GACATCGCTCTAGAGTATGAGCCGAATGCACGACTGATAACTCGATATGAG
CAGCAGTCGGCTATGATTGCAATGCTGCAGTATGTATCCTGATCGTGCCTG
15 CGATGTCTGATAATACGCTCGCATGATATGTATTGCGCTCAGATGCTGGAGAT
ATGCCATGCGTGCTGTCAGTATGCCATGTATGCTGATATGTCGCGATCTATGT
GGTACTATGAGATCCATGTGATGACGTTGCAGTCTCTGTGACCTTATCGACG
CGCATGTGAGCCTATAGACAGCGATGTGAGCACTCTCATCTGCGGATCAGTC
TATCCTCGCTGATGCTCAGTGATAACACGCTGATGCACGTAGTGAGCATCCTG
20 GCTCGCATATACCGCTGCTGCACTGATATGAGCCAGTGCTGCTGCTCTACG
GAGTGTGCTCGGCTATAACAGCGAGTGCTACGCCCTAAACTGGCTGTCTAGAA
CTGTAGCTGGTGCATGTACTCGACTGCCGCTGCATCTACTATAAGACTCTGAC
ATTAGCGTATAGGCTGATAACATTAGCTCGGATGCTATCAGCTTGCCTATT
TATGCCCTGACGCGGGATCTATCAGAACGACTCGGTAGCTCATATACTGGATC
25 ACGGTGCCACAACATGCTACACGAGGTCTCAGACTCTATCCCGTGGACTCAA
CGTGCATCTGCTATGCTGAGCGCGTATCTGTGTACCTGTCCGATGCTCTGATC
TACACTGCCGTGATCGTTATGACGAGACTGTGCGCTCATAGCCGACACTGT
GCTCGATAAGACCACGCTGTGCGGATATAGTCGACCTAGTGCATCCTCGTGG
CATCATGCGTCTCCTCAGTAGGTCTGCGACTGATCCTAGTGCAATGCGTCTGA
30 GCCTGAGCTACAGCGATATAGCCTGGATTGTGAGCGTATTGCTGTCAGAAC
CTCAGCTCATGTATGATGCTGTACCATCCTGCGACTGAAGATGCACCG

CTATAATGCGAGGCTCTCCGCTAAAGTGGAAAGCTGCTCGTTCTCAATGCGAG
CGAGTCGAATTCAATGCCGTAGCTGCGATAACGATGCCGCTGACTCTACGGT
AATGCACGATCCTCTACATTGATAGCAGATAGTCTAACGGGATAGCATAGGT
GCAAGGCTCCTAGCATGTAGTCACAGGTGCTCAGATATAGTCATCGCTGCAA
5 TCAGCTAGTCATCTTGTCAAGGATGCTACTCACTGCGTGCAGAAGATTGCGACG
ACTTCAGAGGATGGCACTCGCATTAGAGTGTATGTTCTCGGATCGACACTGCT
GGTCTGCGAATGACTCGCATTCACTAACATGGAGCATCGTTATCTAAAGGGG
ATGCACGTTATCGTCAGTGGCCGTATGTCTATGCAGTGCAGGCTATGTCTC
ATTAGCGAGTCGTATGTATCATGTCGGGCTCGAATGTTGCACACGTCTGCGTA
10 ATGGTGACCGCTAGTCCCACATGGTGCTTCGTAGCCACAAATGTCGTTAGGTA
GACCGACGTTATCGCGCTACCCGATGTCAACGCGAGTTAGACCGTATCGT
CCCCAGTGCCCTAACAGATGGTCAAGCGTGCCTACGTTAGTATCAGTTCCCT
ATTGGTACGTCTGGCGTACTTCTGAAACGTGATGGGCGGCTGGTTACCCGTAT
ATGGGCTCGGTTGACCTCTATTGGGCGTTGTTGACCCgaattccggaaaaaaaaaaaa
15 aaaaactgcaggcgtaccagcttccctatagtgagtcgtattna.

22. A method of providing a control for an assay, said assay comprising providing
labeled nucleic acid and hybridizing said labeled nucleic acid to a nucleic acid array, said
method comprising spiking said labeled nucleic acid with labeled Tag gene nucleic acid,
20 wherein said nucleic acid array has probes complementary to said Tag gene.

23. A method according to claim 22 wherein said nucleic acid is RNA.

24. A method according to claim 22 wherein said nucleic acid is DNA.

25 25. A method according to claim 22 wherein said Tag gene is selected from the group
consisting of Tags A, B, C, D, E, F, G, H, I, J, N, O, Q, Tag IN, Tag IQ and Tag IQ.EX

26. A method of analyzing the expression of one or more genes, said method
30 comprising:

(a) providing a pool of target nucleic acids comprising RNA transcripts of one

or more of said genes, or nucleic acids derived therefrom using said RNA transcripts as templates;

(b) providing a spike sample comprising RNA transcribed from a Tag gene or Tag nucleic acids derived from said Tag gene RNA using said Tag gene RNA as template;

5 (c) hybridizing said pool of target nucleic acids and said spike sample to an array of oligonucleotide probes immobilized on a surface, said array comprising more than 100 different oligonucleotides, at least some of which comprise control probes and at least some of which comprise probes complementary to said Tag gene or said nucleic acid derived from said Tag gene RNA, wherein each

10 different oligonucleotide is localized in a predetermined region of said surface, the density of said different oligonucleotides is greater than about 60 different oligonucleotides per 1 cm², and at least some of said oligonucleotide probes are complementary to said RNA transcripts or said nucleic acids derived therefrom using said RNA transcripts;

15 (d) quantifying the hybridization of said nucleic acids to said array, wherein said quantification is proportional to the expression level of said genes; and

(e) quantifying the hybridization of said spike sample to said array.

27. A method according to claim 26 wherein said Tag gene is selected from the group consisting of Tags A, B, C, D, E, F, G, H, I, J, N, O, Q, Tag IN, Tag IQ and Tag IQ.EX

20

28. A DNA molecule comprising a Tag gene, said Tag gene comprising at least 5 Tag sequences or their complement.

25 29. A DNA molecule according to claim 28 wherein said Tag sequences are selected from Seq. Id. Nos. 1-2050.

30. A DNA molecule according to claim 29 wherein said Tag gene sequences are selected from the group consisting of Tags A, B, C, D, E, F, G, H, I, J, N, O, Q, Tag IN, Tag IQ and Tag IQ.EX